**COCA Conference Call**
**Travel Medicine and the Pre-Travel Consultation**
**Gary Brunette, MD, MS**
**February 20, 2007**

**Coordinator:** Welcome and thank you for standing by.

At this time, all participants are in a listen-only mode. During the question & answer session, please press star 1 on your touchtone phone.

Today's conference is being recorded. If you have any objections, you may disconnect at this time.

Now, I will turn the meeting over to Ms. Bindu Tharian.

You may begin.

**Bindu Tharian:** Good afternoon and thank you for joining us for today's COCA Conference Call on Travel Medicine and the Pre-Travel Consultation.

We had some technical difficulties earlier and we want to thank you for your patience.

We are pleased to have Dr. Gary Brunette here with us to speak about this topic.

Dr. Brunette is a medical epidemiologist on the Travelers' Health team at the CDC. He previously served as a medical officer in the US Navy where he was also involved in preparing travelers for international destinations.

The objectives for today's call are for medical providers to understand the extent of US travel abroad, morbidity and mortality in travelers, the importance of pre-travel consultation, elements of the pre-travel consultation including the risk assessment of patients and the risk management of patients.

Dr. Brunette, you may begin.

**Gary Brunette:** Thank you very much.

Well, welcome all. I appreciate you joining me for this presentation which we hope will be the first in a series of travel medicine presentations.

I am joined today by Dr. Christie Reed who will help us answer questions at the end of this presentation.

So, as was mentioned, I will be talking today about the pre-travel consultation.

For tourists or for business travelers, for persons returning to their countries of origin to visit friends and relatives, for missionaries or for aid workers, in fact, for all travelers, an important step in their travel preparation is a visit to their primary care provider or to their travel medicine specialist. In my mind, this is as important as booking the air tickets or arranging the accommodations. These are all activities that help to ensure a successful trip.

Moving to the second slide, it is my hope to provide an overview of some of the issues covered during the pre-travel consultation. We first need to discuss why travel medicine is fast becoming a well-recognized subspecialty.

We will look at some of the data related to travel health epidemiology. We will then need to review the important elements of the patient risk assessment such as the review of the patient's health and the review of the intended itinerary.

We will look at some of the sources of information available to both the provider and the patients and we will briefly outline some of the major risks faced by the traveler. We will then discuss the elements of patient risk management such as vaccinations, medication, and counseling.

Next slide.

Many people are surprised by the number of Americans who travel abroad each year. This graph shows the number of US residents who traveled abroad from 1995 to 2005.

You will notice the general upward trend, the reaction to the events of 2001 and the subsequent resurgence in numbers for 2004 and 2005. In 2005, over 60 million Americans traveled outside the country.

Next slide.

This is another graph looking at international travel. The blue, red, and green curves measured on the Y-axis on the left, indicate travel by US residents. This is a breakdown of the numbers seen on the previous slide.

I would like to emphasize the orange curve which is measured on the Y-axis on the right, this is the number of worldwide arrivals. That is, all international arrivals around the world. You would note that in 2005, there were more than 800 million international trips.

Next slide.

The question is often asked, "Where do US residents travel?" Data from the HealthStyles survey of 2005 indicate that around 17% of Americans traveled abroad in the previous year.

Of those, around 25% traveled to Canada, over 30% traveled to Mexico, more than 20% traveled to Europe and over 25% visited the Caribbean; sizable numbers also visited Australia and New Zealand, Central and South America, Japan, Oceania and the Pacific Islands, Africa and the Middle East.

Next slide.

Many travelers are returning to their country of origin or to their parents' country of origin to visit friends and relatives. These travelers are often referred to as VFRs, Visiting Friends and Relatives.

VFRs make up a substantial proportion of US travelers. Foreign-born US residents increased 57% from 19.8 million in 1990 to 31.1 million in 2000, 20% of the US population are first or second generation immigrants. And lastly, in 2004, VFRs accounted for nearly 50% of US international travelers.

This group faces unique health challenges while traveling. For example, they have often lost acquired immunity to many infectious diseases and they have different assumptions of the health risks they face in their current countries of origin.

Next slide.

This slide examines traveler’s health risks. It can be seen that approximately 50% of travelers will experience some health problem while abroad, 8% will need to be seen by a physician, and 5% will be confined to bed, 300 in 100,000 will be admitted to hospital, 50 in 100,000 will require air evacuation, and one in 100,000 will die while traveling abroad.

What can be done to prevent this?

One important step is for the traveler to consult with a medical provider while in the planning stages of the trip preferably four to six weeks before their departure. This brings us to a closer examination of the pre-travel consultation.

Next slide.

The first step of the consultation is the risk assessment. This is an individualized evaluation of the patient’s health, their medical issues and their

travel plans and an evaluation of their particular attitudes towards risks, that is, their likely behavioral patterns while traveling and the level of security that they are comfortable with.

Firstly, looking at medical issues. This is a careful examination of the patient's health and how it might be affected by travel. There are age-specific risks associated with travel.

For example, the very young and old have a different risk profile to certain infectious diseases, certain medical histories such as underlying illness may be exacerbated, immunosuppression, well, among other things, increase the risks of certain infections.

Therefore, a careful history, systems review, medications used, and vaccination history is required. Allergies and contraindications to vaccines and medications are an important consideration.

Next slide.

Pregnancy, breastfeeding, and conception plans have serious implications when deciding on the fitness of the patient for travel, the advisability of the itinerary, the vaccines and medications that they can receive, and the special counseling that they will require.

The provider also needs to assess the potential risk-taking behaviors of the patient. Again, special counseling may be required or medications and vaccinations not offered to regular travelers, may be suggested.

Next slide.

We're on the travel itinerary slide now. An important part of the risk assessment is a careful evaluation of the proposed travel plans. A detailed and full itinerary is required including dates of travel, duration and all locations to be visited, including all stopovers.

There is a vast difference in individual traveling style; is the patient a backpacker or luxury tourist, will their trip be confined to major cities or will they spend time in rural environments, do they intend to hike and camp or will they be staying in hotels and resorts, are they there to conduct business, to participate in adventure activities or will they possibly be part of a humanitarian effort in difficult circumstances? All this information needs to be factored into the risk assessment.

Next slide.

This brings us to a quick review of some of the resources available to both the provider and the patient. There is an expanded list of these resources at the end of the presentation which I will not cover at this time.

The traveler's health team at the CDC maintains a comprehensive Web site aimed at meeting the informational needs of the traveling public. I will look at this web site a little bit more closely in the next few slides.

The CDC also produces the Yellow Book or "Health Information for the International Traveler", which is published every two years. Information from the Yellow Book is available on the travel web site.

The World Health Organization maintains a similar web site and also produces a Green Book on "International Travel and Health". The State Department has a travelers health web site and many organizations both local and international such as the International Society of Travel Medicine, offer comprehensive web sites advising travelers on their health needs.

Next slide.

This is the CDC's Traveler's Health homepage. It is usually ranked in the Top 5 CDC sites in web use. The primary audience for the site is the traveling public and health professionals who advise travelers.

Content areas include travel notices and announcements, the online Yellow Book, as I mentioned, regional destination pages and various resources such as the Yellow Fever registry, travel medicine clinics, and the ability to contact the travelers' health team.

There are additional topics on diseases from A to Z, traveling with pets, children, and for special needs travelers. There's also information for the travel industry.

Next page.

These are the informational pages for regional destinations. Efforts are currently underway to provide country-specific information and this should be online in the very near future.

Next page.

The web site also provides current information about situations that may impact the health of travelers. CDC issues different types of notices for international travelers. They describe both the levels of risks for the traveler and recommended preventive measures to be taken at each level of risk.

There are four levels. Firstly, “In the News”: these are reports of sporadic cases where there is no increased risk for travelers above the baseline.

Secondly, “Outbreak Notices”: These are outbreaks in limited geographic areas or settings where there is increased risk but it is definable and limited to specific settings.

The “Travel Health Precaution”. This is an outbreak of greater scope affecting a larger geographic area. There is increased risk in some settings along with risk of spread to other areas.

And finally, the “Travel Health Warning”, where there is evidence that the outbreak is expanding outside the area of populations initially affected. There is an increased risk because of evidence of transmission outside defined settings and/or inadequate containment measures.

Next slide.

This pie chart summarizes the major causes of death in international travelers. You will observe that the greatest single cause of death, almost 50% of all deaths in overseas travelers, is caused by cardiovascular problems indicated by the blue slice.

Those related to medical causes, indicated in green, are ranked next at approximately 25%. Injuries, in red, are the cause of approximately 20% of deaths.

Somewhat surprisingly to some people is that infectious diseases indicated in yellow are minor contributing factor. That being said, it should be remembered that many infectious diseases are preventable either with prophylactic medication or vaccination.

Next slide.

This slide lists some of the infectious diseases that could affect travelers. This is by no means a complete list but it does represent the diseases which travel medicine providers need to be aware of.

Because this presentation is an overview of the pre-travel consultation, I will not be able to examine any of these diseases in any depth. It is hoped that future presentations will be able to do this topic justice.

Each of these diseases has a particular epidemiology and a reasonably defined geographic range. Some are preventable with medications, others with

vaccines, and some are only prevented with personal protective measures; it therefore behooves the practitioner to become familiar with these details.

Detailed information can be found on the web sites I mentioned earlier, particularly the CDC web site.

Next page.

We saw in an earlier slide that injuries make up approximately 20% of all deaths during international travel. This graph shows the breakdown of these injuries.

The point to be made here is that motor vehicle accidents and drowning are the largest cause of injury deaths in travelers. The high risk of motor vehicle accidents is particularly relevant in the developing world where tourists are 4 to 5 times more likely to be involved in road trauma than locals. Wounds sustained in these countries are at higher risk of turning septic and emergency medical services are often rudimentary.

Next slide.

Apart from the risk of infectious disease and accidental injury, there are other risks to the international traveler which may have a serious impact on health. Many of these risks also have a characteristic epidemiology and certain destinations may pose a higher risk than others.

For example, a study of various information sources will indicate those countries or regions with a higher incidence of violent crime towards tourists. Other countries with harsher climates may post certain environmental risks. And certain dermatological disorders may be more common in the tropics.

Next slide.

Immunizations play an important part of the risk management of the individual traveler. This is a topic which needs to be understood in some depth but unfortunately due to time constraints will only be briefly touched upon today.

Providers should ensure that all travelers are up-to-date with their routine immunizations including an annual influenza vaccination. Yellow Fever vaccine is a required vaccine for entry into many countries. Providers can consult the CDC's Yellow Book or Travelers' Health web site to see which countries require this vaccine.

Recommended travel vaccines include Hepatitis A, Hepatitis B, typhoid, and depending on the travel destination, other vaccines may be recommended such as rabies, polio, meningococcal, and Japanese encephalitis.

Next slide.

Another important aspect of risk management is the provision of appropriate medications to international travelers.

An assessment of the patient's risk for exposure to malaria is essential. If any risk exists, travelers should be placed on a prophylactic regimen, the choice of which depends on the travel destination and the known epidemiology of the disease in that location.

Consideration needs to be given to the species of Plasmodium present, the resistance to medication, and the expected compliance of the patients. For those travelers who may be unable to get urgent medical care, consideration should be given to a self-treatment regimen.

Travelers to the developing world would benefit from a short course of antibiotics to be self-administered in the event of persistent diarrhea. And certain travelers may also benefit from medication to prevent the symptoms of altitude and motion sickness.

Next slide.

We're now on the patient counseling slide. The third and last component of the patient risk management is counseling. This is an extremely important element of the consultation and may require a substantial amount of time. Counseling should always be tailored to suit the individual traveler and will be based on the risk assessment completed earlier.

For those patients with existing health problems, it is important that they understand the impact that travel risks and stresses may put on their conditions. They need to be advised on how to maintain their current health status and may require help with planning their trip.

For example, they may need counseling on the importance of continuing current medications, seeking medical care at their destination, special diet considerations, and so on.

Travelers may also need counseling on the advisability of the itinerary. For example, pregnant women may wish to avoid areas with a high malaria risks or elderly travelers may be advised to make changes in destination in order to avoid the required Yellow Fever vaccination.

Next slide.

As part of a traveler's preparation for their trip abroad, they may need to be advised on the importance of adequate medical insurance, especially for hospitalizations or emergency evacuation.

Depending on their risk and destination, they may require advice on how to obtain medical care abroad. In certain circumstances, care may be prearranged. Travelers should also be advised to be aware of travel notices placed on both the CDC and State Department web sites.

Finally, the importance of hand washing and maintaining good hygiene should be stressed.

Next slide.

We will now examine a number of slides which outline precautions that travelers can take to ensure their own health. We start with the environmental precautions.

Long distance air travel is associated with certain risks such as DVTs and jet lag, and patients can be advised on how to prevent or manage these. Travelers to countries with extreme environmental conditions should be advised on sun protection, the extremes of heat and cold and how to avoid dehydration and heat injuries or hypothermia and frostbite, and on the possibility of altitude sickness.

Water recreation can pose a substantial risk especially the risk of accidental injury or death. Certain bodies of water should be avoided due to parasitic infections or contamination.

Next slide.

Food and Water Precautions.

Diarrhea is a common ailment in travelers especially those to the developing world. Travelers should be advised to drink only bottled water, select their foods carefully and choose well-cooked items that are still hot.

Many items should be avoided if possible. For example, salads and raw vegetables may have been washed in contaminated water, unpasteurized dairy products may have a risk for diseases such as brucellosis.

Street vendors often have suboptimal hygiene standards and should be avoided, and ice in developing countries is usually produced with local tap water and has the risk of contamination.

Next slide.

Vector Precautions.

Patients should be advised that any prophylactic medications or vaccinations that they receive should be considered the last line of defense in the prevention of many vector-borne diseases.

The efficacy of medications and vaccines is never 100%. Personal protective measures are essential in preventing these diseases and should be considered the first line of defense. All these measures are designed to prevent the vector from biting the traveler.

Some simple methods are: covering exposed skin with clothing, using an insect repellent containing at least 20% and up to 50% DEET, the use of permethrin to treat outer clothing and bed nets, the use of an insect screen and, where possible, air conditioning, the use of aerosol insecticide indoors, and pyrethroid coils outdoors, and the regular inspection for ticks after outdoor activity.

Next slide.

Bloodborne and STD Precautions.

Depending on the risk profile of the traveler, the provider may wish to discuss the risks associated with unprotected sexual activity. The traveler also needs to be aware of the risks associated with bloodborne infections.

Particular advice may be given regarding automobile accidents and the possible requirement for surgery and blood products. Elective dental or surgical procedures should be avoided in certain countries and tattooing and body piercing also pose a risk of bloodborne disease.

Next slide.

Animal Precautions.

In areas with the risk of rabies, patients should be advised to avoid all animals including domestic animals. While certain species of animal are often associated with rabies, any bite or scratch from any animal should be

medically evaluated and post exposure immunization and immunoglobulin should be considered.

Travelers also need to be aware of the risk of envenomation from snakes, spiders, and certain marine animals.

Next slide.

We're on the injury and crime slide.

We had discussed earlier the risk of motor vehicle accidents. Travelers should also be aware of the risk to pedestrians and should avoid night travel where possible. Seat belts and infant car seats should always be used.

Travelers should be aware of the risks associated with local crime activity and should be encouraged to maintain their situational awareness. They may also be targeted for scams and violent crime.

Next slide.

As part of the preparation for travel, travelers should be advised to put together a travel emergency kit. This will differ somewhat depending on the destination of the traveler.

But usually, it will contain a copy of their medical records and extra pair of glasses, all their prescription medications and then a variety of over-the-counter medications and supplies that will help them deal with any minor health problems.

Next slide.

Post-Travel Care.

While routine post-travel checkups are not usually recommended, it is advised that long-term travelers or adventure travelers or expatriates who have been in the developing world for an extended period receive a post-travel checkup.

Any patient who experiences fevers or chills, sweats, persistent diarrhea or weight loss should be evaluated on return. One important point to note is that any fever in a traveler returning from an endemic area should be considered malaria until proven otherwise.

And that ends the presentation. I should point out that there are few additional slides on resources and if we are unable to get all your questions today, you may email questions to coca@cdc.gov.

Thank you very much.

**Bindu Tharian:** Thank you, Dr. Brunette.

That was a very informative presentation. And now, we can open up the lines for the question & answer session.

**Coordinator:** Thank you.

If you would like to ask a question, please press star-1. Please unmute your line and record your first and last name when prompted. To withdraw your request, press star-2.

Once again, if you'd like to ask a question, please press star-1.

One moment.

You may ask your question.

**Question:** Hi. I actually have two questions on the slide that demonstrates death related to international travel. I was wondering under the medical listing if there were some specific causes to include with that i.e., is that like diabetes, blood pressure.

And then my second question was when you're talking about a post-travel exam, you recommended that for long-term travelers, what would you identify as long term?

**Gary Brunette:** Thank you very much. I appreciate those questions.

Firstly, as regards to medical issues that might contribute to death in the international traveler, you're quite right, general medical issues such as diabetes and high blood pressure, all contribute to this.

Did you have anything else that you wanted to add?

**Christie Reed:** Patient's underlying condition is usually the contributing factor and cardiovascular would be the majority.

**Gary Brunette:** I'm sorry, your second question was?

**Question cont:** Yeah, you recommended a post-travel examination. One of the categories you said was for long-term travelers, what do you use as criteria for a long-term traveler, is there a specific timeframe you use?

**Gary Brunette:** No, no specific timeframe and it's not just time and such that should be factored into this, it also got to do a lot with the type of travel that they undertook.

But I would generally think that someone who would be overseas in high risk area for more than a couple of weeks or had been in that country's areas where there is high risk would probably benefit from a check up.

**Question cont:** Great, thank you.

**Coordinator:** You may ask your question.

**Question:** Thank you.

We have some teenage students that are very soon, like in the next two weeks, going to travel to India without any immunizations. We have an area of, or a pocket of folks in our area, that, generally, parents waived in immunizations because they don't believe in them for, you know, a variety of reasons.

Is there anything at all that we can do other than try and educate those parents which we've been trying to deal for about two or three weeks. What would you recommend?

**Christie Reed:** Well, that is one area of the world in which polio virus is still actively circulating so it sounds like you've done a great deal of education with them. I don't know if those certain factors might help, the other factor being that the majority of cases of typhoid in the United States are imported in travelers and primarily from that part of the world. I don't know if that extra ammunition might help you.

**Question cont:** That's what we've been trying to do is to educate them because we haven't been successful in pulling in very many of those students for immunizations.

**Christie Reed:** The next level of behavior that you would talk about then if they are resistant to the ideas of prophylaxis is discussing the importance of behavior, mention that food-borne infections are transmitted through food and water so strict adherence to the hygiene measures are recommended. And the importance of insect repellant.

One wonders if they're wary of immunizations, how they feel about insect repellants. But even, as Gary mentioned from malaria, we never will rely just on prophylactic medications but consider a three-part strategy, one being the medication, two, being barrier methods, advising people of the times that

those pests and mosquitoes bite. Mosquitoes that transmit malaria are dust to dawn biters.

So emphasizing all of those behaviors, bed mats, long sleeves and then insect repellant: that it's still needed on exposed surfaces such as hands and face.

The other item we also try to convey is that there are avariety of other mosquitoes that bite at different times of the day, including daytime biters, and that there are currently outbreaks going on in that area of dengue and chikungunya.

It depends on where they're particularly going; there are some other viruses that are transmitted by mosquitoes that are in different pockets. So at that point that it comes down to strict behavior.

Is that helpful?

**Question cont:** Yes, very. And thank you so much.

**Coordinator:** You may ask your questions.

**Question:** Now what's the current thinking on the use of preventive medications for traveler's diarrhea? I'm thinking particularly people who are immunosuppressed or have HIV.

**Christie Reed:** Well, that is a complicated topic. Yes, for immunosuppression we have a whole section on that in the Yellow Book. And on HIV, one tends to look (which you are probably already familiar with), at the person's current CD4 count. to determine the level of immunosuppression that we consider that they have: >500 would not be considered immunocompromised for pre-travel preparation.

The strict adherence to hygiene measures that I just discussed with the previous caller. And then depending on the degree of immunosuppression, for example whether they are within the period between bone marrow transplant is less than two years, in some cases, the travel is just not recommended. So there's a range of philosophies.

But for traveler's diarrhea prophylaxis , there are products that have been recommended, there's Pepto-Bismol. Again, adherence may be an issue, as several tablets are required several times a day, and may be used only for approximately three weeks.

So, again, compliance in terms of whether individuals are in compliant is an issue , as are whether those medications are interactive with any of the medications they are taking and then they're not 100% effective.

The other situation for what you're mentioning has been recommended on occasion if there is someone who is desperately needing to go to a meeting or is a high-end sports performer who must perform, or for a short visit in a very limited set of circumstances but consider that it's not 100%.

**Question cont:** Okay, thank you.

**Coordinator:** You may ask your question.

**Question:** Yes, hi. I was wondering that the Saudi government as probably everybody knows has mandated the meningococcal vaccine and a doctors visit people going for - to visit, for Hajj or whatever make the road to this pilgrimage.

But I think there have been some problems with the new meningococcal vaccine and I was wondering, I mean, is there anyway that - I mean, nobody is coming back with meningitis or anything, trip to Saudi Arabia, and I think the CDC also - NMWR also did something that showed that there really haven't been any cases, so many people came back as carriers, has - nasal pharyngeal swabs are positive.

Do we still really need that vaccine? Is there anyway to like go around getting that meningococcal vaccine? Do you think there's a need for it basically in Saudi Arabia?

**Christie Reed:** Yes, I do think there is a need for it because we can't predict the future necessarily and it has been a problem in the past. There are two vaccines. The new one has age limits, 11 to 64, and the other one is from two to all age group.

There were some initial reports, so I think that might be what you're referring to, of events temporally associated with the MCV4 or Menactra, but I think that's still being determined as to whether those are coincidental events because you would expect a certain amount in that age population that we're suddenly vaccinating now. But you do always have the option of the other vaccine to use.

**Question cont:** Uh-huh.

**Christie Reed:** Yes, it is still strictly recommended, and the Saudi government does require it, I believe, in order for the person to gain entry.

**Question cont:** Right. So although this - there hasn't been cases, you still think that everybody should - in your opinion as a doctor, you still think everybody should be vaccinated like totally, right?

**Christie Reed:** Well, one of the reasons there have been no cases is that there is herd immunity by a vaccinated population.

**Question cont:** Yeah. Okay, thank you.

**Coordinator:** You may ask your question.

**Question:** Hi. Thank you.

I was just wondering about your recommendation for the Pepto-Bismol, I have families that travel and I am a little concerned with the salicylate and Pepto-Bismol and Reye syndrome. Do you have any concerns? Have you seen anything like that?

**Christie Reed:** Well, actually as you said those are one of the reasons that prophylactic treatment is still being debated and not certainly recommended. You're right in terms of issues with co-infections with viral infections.

**Question cont:** Uh-huh.

**Christie Reed:** Thus strong adherence, although it's not as popular, thus strong adherence to the food and water precautions are what's emphasized because they can be maintained, although they are subject to behavior.

**Question cont:** Okay.

And I had one other comment. I was very curious to her the phone call about the school trips going to India and the parents not allowing their kids to be immunized.

I just wanted to comment that we made the decision or I'm making the decision of - to not allow those kids to participate in the trip instead of a risk benefit decision similar to when we would exclude them from school because of a measles outbreak if they had not been vaccinated with measles.

I just wanted to comment on that and I don't know if anybody else has had to make that decision or not.

**Christie Reed:** Thank you. That's an important tool I think.

**Question cont:** Right.

**Coordinator:** You may ask your question.

**Question:** I was just wondering the slide about the incidence of illness abroad, I know there's such a small amount of infectious disease, given the emergence of new infectious disease in the last ten to 15 years, would you think that that would be a larger number at this point?

**Gary Brunette:** Yes, it would be.

**Christie Reed:** That slide in question were actually just deaths abroad. And so, in terms of illnesses, that would be a different story. But just - let me back up, finding rates among travelers is an interesting proposition, we must get the data where we can but there's not a clear indication of how many people travel to each area.

We do surveys and can estimate. So it's difficult to come up with rates. This paper that we presented the data on deaths was a little bit easier as to bring someone back into United States there are permits involved, and so they were able to work with the consuls and Department of State.

So, just to make sure, those presentations where related to deaths.

When we do look at infections, a topic we hope to address at another point, some of the vaccine preventable diseases, for example, measles, typhoid that I mentioned earlier, and Hepatitis A, for at least measles and typhoid, the majority of cases in the US are imported.

And for Hepatitis A, the last survey indicated that a third of the cases were imported. So for illnesses, yes, the proportion would be different than those we discussed for deaths.

**Question cont:** Well, thank you for clarifying that because I didn't realize that it was death as opposed to the incidence of illness. So I'll look forward to your next topic.

Thank you.

**Christie Reed:** Thank you.

**Coordinator:** You may ask your question.

**Question:** Regarding brittle asthmatic traveling to Quito, are there any special risks for them at that altitude and additionally, anything that can be done to mitigate or prepare them for it? And additionally, if they began at the Amazon basically the lower altitude and progress to Quito, would that add any risk?

**Christie Reed:** Okay. So you have brittle asthmatic and I'm not sure what age?

**Question cont:** Fifty.

**Christie Reed:** Fifty. And…

**Question cont :** Successfully traveled there three times previous. Last year, ended up with a course of steroids during the trip to - so they could sleep.

**Christie Reed:** Okay. So has tolerated altitude before and doesn't have necessarily oxygen deprivation although it sounds like he is getting a little older perhaps. And the question will always be whether there are any other respiratory triggers or respiratory infections.

But progression, slower progression, would seem to allow better compensation for this oxygen need. However, altitude illnesses is idiosyncratic and such that even if a person travels successfully in the past can't always guarantee that they will tolerate the change in the altitude on a subsequent trip.

I'm not sure of what his existing regimen is but I would imagine it involves daily steroids.

**Question cont:** Yes.

**Christie Reed:** But that would be something to consider in terms of whether that dosage might be perhaps adjusted well enough in advanced and maximizing any other conditions in his asthma. Well if it's brittle, it sounds like you probably have already done that.

If - beyond that level, we'd be happy - there are some additional researches on altitude medicine that we could refer to that might be more helpful beyond that level for you.

**Question cont:** That will be good.

**Christie Reed:** Do you want to send an e-mail to Dr. Brunette and we'll be able to communicate that way?

**Question cont:** Certainly.

**Bindu Tharian:** If you can e-mail, coca@cdc.gov, we can get that information over to you.

**Question cont :** Okay, great. I appreciate it. Thank you very much.

**Coordinator:** You may ask your question.

**Question:** Thank you very much. I do have two quick questions.

The first one's regarding immunocompromised especially HIV patients. My standard statement is the patient's in terms of the clinical application of yellow fever vaccine as long as the CD4 count is above 200, we typically will proceed with administration of the yellow fever vaccine.

Do you also find that appropriate guidelines and the cut-off for yellow fever in HIV positive patients?

**Christie Reed:** Exactly. The CDC count - excuse me, CD4 count from 200 to 500 are considered to have limited immune deficit. However, they'd have to have the standard warning of we're not exactly sure what all of the issues are related to yellow fever adverse events. For example, age is - there seems to be a higher rate of adverse events associated with age, however, it's not been 100%, there have persons as young as 22.

**Question cont:** Okay. And my only other question is, I just recently attended a conference comparing azithromycin versus ciprofloxacin for traveler's diarrhea. Do you all see any problems with people traveling to the more common places like Bahamas, at Central and South America, sticking with Cipro versus azithromycin or is there a preference in the travel medicine community at this time?

**Christie Reed:** You know, I'm sorry I missed the beginning part of your question but you've gone to a conference and what was the next part you said?

**Question cont:** There were - a lot of the talk was about using Zithromax versus Cipro in terms of traveler's diarrhea primarily for resistant bugs and I was just trying to see if you all had any preferences or any specific areas that you'd use one versus the other.

**Christie Reed:** Yes. And that's the part where I missed out for a minute. In certain parts of South East Asia, there is increasing resistance to the floxacins so in that part - travelers to that part of the world, yes, there is a move toward recommending Azithromycin. It has not been at as well demonstrated in other parts of the world, so currently, that's where we are recommending it but monitoring the other areas.

**Question cont :** Okay, I appreciate it. Thank you very much.

**Coordinator:** You may ask your question.

**Question:** Yeah, thank you. I have a couple of questions. Kind of unrelated.

First of all, in terms of administration of yellow fever vaccine, how liberal are you with vaccine administration, for example, someone who's on a chronic low dose of Prednisone.

I have a patient who needs to show proof of yellow fever vaccination for a trip into Mali and has been on 5 milligrams of Prednisone every other day for several years. That's one question I have.

And also related to that is how are you guys managing people who are taking these new agents for rheumatoid arthritis and so on and so forth and whether you feel that has an effect in the immune system?

The other question I have, which is a little unrelated is what are your thoughts or advice or, you know, position in terms of working with people to convince them of the need of travel medicine in the face of the fact that insurance do not cover most of the services?

**Christie Reed:** Okay, I think I've got all three parts.

Let me deal with the rheumatoid arthritis and those medications. Yeah, the number of medications that are being used are expanding. Many of the agents that we typically think of as, you know, anticancer and anti-inflammatory are being used in a wider variety of illnesses and patients are improving and then coming to clinic and they want to take that trip of a lifetime that they've always dreamt of.

So this is an increasing challenge.

The agents, the anti- TNF alphas and the other agents, they are in our new version of the Yellow Book coming out in May, we are able to cite them. And if you do write, we can forward you the reference.

And I have stated that the effects on the immune system are not completely understood and so particularly live virus vaccine would not be recommended in those populations because it's just not known what their effect is as the patients are subject to increased infections.

So that being said, we do have to watch the new agents they have here and turn, in some cases, to our rheumatology colleagues who are watching the infection rate as the baseline and use that information because there's not a lot of other studies or information of vaccines; we're having to extrapolate.

In your patient going to Mali, they are on a low does of steroids, they have to go to Mali, they have to make that trip and that seems to be the case. In working with a patient, in any case, we often make the recommendation, you know " Do they have to make this trip?"

If they're going to a country that has a yellow fever requirement and maybe the patient is only going to the part of the country where there is not a risk, back to our discussion in South America, the patient is going to a high elevation, a waiver is sometimes indicated.

And again, I'll refer people to the Yellow Book that is available online. It's, I believe, Chapter 8 that deals - it's Chapter 9, that deals with immunocompromised.

But if your patient does have to go and is on a low dose of steroids, considered to be less than 20 milligram per day for the purposes of pre-travel preparation, they're not considered to be immunosuppressed.

But again, you would have to have a full discussion of the issues and potential adverse effects with yellow fever vaccine and that we're not completely sure what all the triggers are.

I discussed these with the previous caller but also for example the thymus has been implicated and what role it plays in the immune system and whatever the underlying disease the patient is being treated for has to be taken into account also.

**Question cont:** Yeah, one thing that's coming up increasingly, there was a lot of people who are just are unable to get their visas without these and some of them are cruise companies that are requiring it and they have people who are 90 years old.

And so how easily are waivers accepted? I mean, are they generally accepted? When are people able to enter countries with medical waivers is that legitimate medical waivers or can people be banned from entering?

**Christie Reed:** It all depends, and that has to be discussed with the client also. There are varying levels of standards of who's doing the inspection at the destination.

**Question cont:** Uh-huh.

**Christie Reed:** So, one cannot give a blanket assurance.

**Question cont:** Right.

**Christie Reed:** In some cases they are not necessarily accepted, and some cases people are offered the vaccination there, or people are given the offer to turn around. So yes, that has to be discussed in the balance.

But in many cases, they are accepted but it is a case-by-case situation and how long a person is staying. We have heard reports that in places that are less often visited --- cruise ships, we have a lot of people on them but they are at ports not highly visited the way airports are--- it can be a little more variable.

**Question cont:** Uh-huh. Okay.

And on the last, how do you convince people for travel?

**Christie Reed:** That's always an issue of prevention but we try to emphasize on several issues. If they're spending a lot of money on their trip, they're spending a little bit more to try and guarantee that they have a good time on their trip is one approach that we have taken.

Again, among persons traveling abroad, (we weren't able to present all the statistics today but, they can sometimes be used. In the future situation we can describe the number of people who need to seek medical care abroad and our goal is to try to prevent that.

Even if there are for example, vaccines that are not covered, the counseling that goes along with the information is really valuable and that people have not necessarily thought about. And many of the vaccines now are actually becoming routine.

So oftentimes, the recommendations can come from the travel medicine and they can either go to the county health department or to their own doctor to get the basic vaccines. For example, Hepatitis A, and being up-to-date on measles and tetanus are some of the more routine recommendations. even polio, that apply for various parts of the world. And oftentimes those will be covered by their primary care.

So those are some of the strategies that we try to approach. This, and particularly for persons that are older, the issues related to medical transport and arranging for care, not wanting to be transported back. It could be a whole lot more expensive to be transported back to the US than to take a few steps of precaution. But that's something that we have to deal with in prevention: it's always an issue of trying to spend a few pennies on prevention instead of a pound on cure.

**Question cont:** Right.

**Bindu Tharian:** We have time for two more questions.

Are there any more questions?

**Coordinator:** Your line is open.

**Question:** Yeah, can you hear me? I have a question about rabies. Can I go ahead and ask it?

**Coordinator:** Yes, ma'am.

**Question cont:** Okay.

I have a question specific to the rabies pre-exposure prophylaxis, and I'm wondering if someone does get the pre-exposure prophylaxis of the three on the right schedule, does that actually buy them time if they're exposed to rabies after the fact when they're in a foreign country, do they get extra time before they have to get the last two shots or is it still the same within 24 hour recommendation?

**Christie Reed:** It does buy a little more time, however, the issue is always what kind of a bite, how severe and where it was: on their hand , whether it's on their face or on their hands or on their feet. That all makes a difference.

So, it does buy a little bit more time. However, if someone's in a remote area in which they need to seek out the vaccine, that often means traveling to a major center such as to Singapore or Bangkok or Shanghai and that can involve travel over several days. So we are a little bit wary about telling people how much time in case they're delayed.

**Question cont:** Great, thank you.

**Coordinator:** Your line is open.

**Question:** Hi. I just have a couple of questions. I've been giving advice to business travelers for years and many of them are engineers who read the CDC guidelines obsessively and take quite literally.

And issues of - particularly on Japanese encephalitis vaccine, my understanding is there have been almost no cases of non-military Japanese encephalitis in something like 30 years.

And similarly, issues around malaria prophylaxis. How do you - what's the cost benefit you take into account versus the side effects of the drug and the need for prophylaxis in major cities for example, Bangkok.

**Christie Reed:** All very good questions and all questions that . we are trying to address---better denominators-----ourselves because baseline data, for example of the risk of JE and estimates of , the 30 days have been derived are old.

So, that would be a large factor, you know, how long the person is staying. So is it simply people that are going to be, for example (when they're talking about Japanese encephalitis) only in major cities a few days or are they talking about long-term stay?

**Question cont:** A month or so, yes.

**Christie Reed:** 30 days would be the recommendation for getting Japanese encephalitis. The risk - as I said, is hard to determine for a couple of reasons, such as there have also been changes over the past dozen or so years in the vaccination practices in the country.

For example, in Japan, almost everyone is vaccinated. And trying to determine what the frequency of travelers who are not vaccine immune would be in order to detect a single case, that's one of our challenges.

So that you're always grappling with the facts that: absence of a case does not mean absence of risk, and what percentage of travelers go to an area for a certain duration.

So we are actively trying to have better answers to that. But for now we go on expert opinion; that is what we have now for Japanese encephalitis.

For malaria, similar discussion. similar issues in terms of if the person is traveling to an urban area, for example in India. Discussions are going on currently, about urban areas whereas the whole country is colored in as a malaria risk.

And if a traveler is going specifically to an urban area, the question is, will they be spending all - entirely all of their time there?. We found in certain casess where people for one night may we go out to a rural area for dinner, and for example, are not always following all of their prevention procedures.

So that is one of the concerns and questions. Our European colleagues have been grappling with this and have done some tailored mappings. However, conditions can change rapidly and they just experienced that in which an area that had been considered lower risk, suddenly, there were a few cases detected.

So think about for the US as opposed to our European colleagues. As we said earlier in the presentation, approximately 17% of US citizens travel outside the United States for more than one night. In Europe, out of the UK, they have more traveling for a year than they have total population.

So, many people are traveling more often. I'm not saying every person in the UK travels outside every year but the degree of travel is so much higher that there is awareness across the entire country of the risks and we must grapple with the fact that people still comeback to the United States and die from malaria that's not necessarily recognized.

So, those are a variety of the factors that we do try to balance, that maybe the engineers had not perhaps included, but those are some of the factors that we're trying to take into account.

Thank you very much.

**Bindu Tharian:** Thank you again, Dr. Brunette, and other staff from the Travelers Health team for providing our listeners with this information.

Now, I want to thank our listeners for joining us for this call. And in case you didn't get the chance to ask your questions, please send an e-mail to coca@cdc.gov; that's C-O-C-A@ cdc.gov.

The recording of this call and a transcript will be posted to the COCA Web site at www.bt.cdc.gov/coca. Also, if other members of the staff were not able to dial in due to our technical difficulties, please let them know that our replay number recording and transcript will be posted to the COCA site. And stay tuned for our next COCA conference call.

Thank you.

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